

WHAT IS CLAIMED IS:

- 1           1.     An ice cream machine, comprising:  
2                     a cylindrical evaporator having a refrigerant input, and a  
3     refrigerant output, the cylindrical evaporator having an interior surface  
4     defining a cooling chamber, the cooling chamber having an ice cream  
5     input and an ice cream output;  
6                     an evaporator reservoir having a reservoir input and a  
7     reservoir output, the reservoir input being coupled to the refrigerant  
8     output, the evaporator reservoir being located above the cylindrical  
9     evaporator with respect to gravity;  
10                    a compressor having a compressor input coupled to the  
11    reservoir output and a compressor output; and  
12                    a condenser having a condenser input coupled to the  
13    compressor output and a condenser output coupled to the refrigerant  
14    input, whereby a refrigerant travels from the condenser through the  
15    cylindrical evaporator and the evaporator reservoir to the compressor, the  
16    refrigerant being a liquid in the cylindrical evaporator, the refrigerant  
17    accumulating as a vapor in the evaporator reservoir, thereby providing  
18    superior cooling in the cylindrical evaporator.
- 1           2.     The ice cream machine of claim 1 wherein the evaporator  
2     reservoir is a length of copper tubing significantly longer than a distance  
3     from the compressor to the evaporator reservoir.
- 1           3.     The ice cream machine of claim 1 wherein the evaporator  
2     reservoir is a tank.
- 1           4.     The ice cream machine of claim 3 wherein the tank has a  
2     volume at least .33 times a volume of the cylindrical evaporator.

1           5.     The ice cream machine of claim 1 wherein liquid ice cream is  
2     provided to the ice cream input and frozen ice cream is provided by the  
3     ice cream output.

1           6.     The ice cream machine of claim 1 wherein the evaporator  
2     reservoir is two-thirds filled with the liquid.

1           7.     A cooling system for cooling a foodstuff, the cooling system  
2     comprising:

3                     compressor;

4                     an evaporator in the shape of a hollow cylinder, the  
5     evaporator having a refrigerant input and a refrigerant output, the  
6     evaporator containing the foodstuff; and

7                     an auxiliary evaporator means, positioned above the  
8     evaporator with respect to gravity, for receiving a liquid refrigerant from  
9     the refrigerant input of the evaporator and providing a vapor refrigerant to  
10    the compressor, the compressor receiving the vapor refrigerant and  
11    providing the liquid refrigerant to the evaporator, whereby superior cooling  
12    of the foodstuff in the evaporator is attained by completely filling the  
13    evaporator with the liquid refrigerant, the auxiliary evaporator means  
14    causing the evaporator to be completely filled with the liquid refrigerant.

1           8.     The cooling system of claim 7 wherein the auxiliary  
2     evaporator means is a length of copper tubing significantly longer than a  
3     distance from the compressor to the evaporator.

1           9.     The cooling system of claim 8 wherein the copper tubing is  
2     wound in a coil above the evaporator.

1           10.    The cooling system of claim 7 wherein the auxiliary  
2     evaporator means is a cylindrical tank.

1           11.    The cooling system of claim 10 wherein the tank has a  
2   volume at least .33 times a volume of the evaporator.

1           12.    The cooling system of claim 7 wherein the foodstuff is  
2   frozen in the evaporator.

1           13.    The cooling system of claim 7 wherein the auxiliary  
2   evaporator means is two-thirds filled with the liquid refrigerant.

1           14.    The cooling system of claim 12 wherein the foodstuff is ice  
2   cream.

1           15.    The cooling system of claim 12 wherein the foodstuff is  
2   yogurt.

1           16.    An improved ice cream freezing machine including a tubular  
2   evaporator having a refrigerant input at a bottom side of the evaporator,  
3   and a refrigerant output at a top side of the evaporator, the tubular  
4   evaporator having an interior surface defining an interior cooling chamber,  
5   and the cooling chamber having an ice cream input and an ice cream  
6   output, a compressor having a compressor input and a compressor  
7   output, and a condenser having a condenser input coupled to the  
8   compressor output and a condenser output coupled to the refrigerant  
9   input, the improvement comprising: an evaporator reservoir having a  
10   reservoir input coupled to the refrigerant output, and a reservoir output  
11   coupled to the compressor input, the evaporator reservoir being located  
12   above the cylindrical evaporator with respect to gravity, whereby a  
13   refrigerant travels from the condenser through the cylindrical evaporator  
14   and the evaporator reservoir to the compressor, the refrigerant being a  
15   liquid in the cylindrical evaporator, the refrigerant accumulating as a vapor

16 in the evaporator reservoir, thereby providing superior cooling in the  
17 cooling chamber.

1 17. The improved ice cream machine of claim 16 wherein the  
2 evaporator reservoir is a length of tubing substantially longer than the  
3 distance between the evaporator and the compressor.

1 18. The improved ice cream machine of claim 17 wherein the  
2 tubing is coiled.

1 19. The improved ice cream machine of claim 16 wherein the  
2 refrigerant contains FREON™.

1 20. The improved ice cream machine of claim 16 wherein the  
2 auxiliary reservoir is a cylindrical tank.